

Republic of Kenya

EDICT OF GOVERNMENT

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KS 1894-2 (2008) (English): Radio sites Part 2:
Site management (Draft Standard)



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Radio sites —

Part 2: Site management

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TECHNICAL COMMITTEE REPRESENTATION

The following organizations were represented on the Technical Committee:

Widestream Communications Limited
Kenya Broadcasting Corporation
Meteorological Department
Kenya Power & Lighting Company
Telea (K) Limited
SR Kenya Limited
Department of Defence
Kenya Police Force
Communications Commission of Kenya
Kenya Bureau of Standards — Secretariat

REVISION OF KENYA STANDARDS

In order to keep abreast of progress in industry, Kenya standards shall be regularly reviewed. Suggestions for improvement to published standards, addressed to the Managing Director, Kenya Bureau of Standards, are welcome.

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Radio sites —

Part 2:

Site management

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FOREWORD

This Kenya standard was prepared by the *Communication Equipment* under the mandate of the Electrical Industry Standards Committee in accordance with the procedures of the Bureau and is in compliance with Annex 3 of the WTO/TB Agreement.

Normative and informative annexes

A 'normative' annex is an integral part of a standard, whereas an 'informative' annex is only for information and guidance.

Summary of development

This Kenya Standard, having been prepared by the Communication Equipment Technical Committee was first approved by the National Standards Council in December 2008	Amendments issued since publication		
	Amd. No.	Date	Text affected

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Introduction

This Kenya standard is intended to standardize the establishment and management of radio communication antenna high sites. The responsibility for operating a well managed and properly engineered site rests on the site owner and on the radio site licensee.

The range of radio communication is greatly extended by the use of a repeater or remote controlled base station located on a high site.

Throughout the world the growth in mobile and personal communication has resulted in the simultaneous growth in the number of high sites. Unfortunately, many of these sites have been unplanned, both from an aesthetic and an engineering standpoint. Antennae have been installed on masts or rooftops without any regard to environmental impact, safety, and compatibility with existing installations. The result is public resistance to unsightly antenna masts and installations, and user dissatisfaction with the degree of interference with their communication.

The growth in radio services has resulted in an increase in the number of radio sites required. It is very important that the planning authorities carefully consider applications for new sites, investigating (among other aspects) the technical, environmental and aesthetic impact.

Sites should be shared wherever possible and new applications should take this into consideration. Radio systems should therefore be so designed that individual systems operate with minimum interference to other systems. The radio sites should have sufficient capacity for the foreseeable requirements, with the minimum impact on the environment and the optimum use of the proposed installation.

Radio sites — Part 2: Site management

1 Scope

This part of this Kenya Standard covers procedures for radio site management. Guidelines are given with regard to the methods to be followed in the management of the high site and in the environmental impact investigation. However, the responsibility rests with the authority to ensure that the management of the high site and the impact investigation report comply with the requirements of this Kenya Standard.

NOTE 1 This part of this Kenya Standard seeks to encourage compliance with the Environmental Management Coordination Act, (EMCA), 1999.

NOTE 2 A flow chart for a high site impact investigation is given in annex A. This chart does not provide for all possibilities that are discussed in this Kenya standard and should therefore be read in conjunction with this part of this Kenya standard.

NOTE 3 A check list of items that may need to be addressed in the high site impact investigation appears in annex B.

2 Normative reference

The following referenced documents are indispensable for the application of this Kenya Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

KS 1590-1, *Kenya Standard — Specification for siting of radiocommunication facilities — Part 1: Low frequency, medium frequency and high frequency transmitting and high frequency receiving facilities*

KS 1590-2, *Kenya Standard — Specification for siting of radiocommunication facilities — Part 2: Guidelines for fixed, mobile and broadcasting services operating at frequencies above 30 MHz*

3 Definitions

For the purposes of this Kenya standard, the following definitions apply:

3.1

EMCA

The Environmental Management Coordination Act, 1999.

3.2

alternative site

A site at another location, which could adequately serve the proposed coverage area.

3.3

communal site

An area that is shared among several users for the same purpose.

3.4

existing development

An area, a building or an activity that has already been developed, built or established for a particular purpose.

3.5

management

The exercise of control over a site and its users, to ensure that the site is maintained at the same level of operation as when it was originally approved.

3.6

radio mast

The fixed structure upon which an antenna is mounted.

3.8

radio site

The area demarcated for the erection of a mast and ancillary structures.

3.9

relevant authority

The Communications Commission of Kenya.

3.10

RF pollution

Undesirable emission to the other radio-frequency spectrum users that will cause interference problems.

4 Environmental impact investigation

4.1 Purpose

In the case of new sites, the purpose of an investigation is to determine whether the proposed development of a radio site will have significant environmental impact.

In the case of existing sites, the purpose of an investigation is to determine whether the site has had any adverse impact on the environment and to determine how such an impact can be reduced.

4.2 Parties concerned

The applicant should identify the parties concerned and he should also notify them of the site of the proposed development, unless the relevant authority gives the permission for this step to be excluded on account of the confidential nature of the proposal.

Parties that could be concerned with an environmental impact investigation are as follows:

- a) the relevant authority (possibly assisted by its own advisory expert(s)) that sets requirements and that has eventually to approve or reject the project proposal;
- b) the applicant who submits the project proposal for approval by the authority;
- c) the applicant's own advisor (own staff member or an appointed advisor) who conducts the investigation and prepares the report; and
- d) persons who could be affected by the development, including the associations, committees or organizations representing them. Examples of possible affected parties are
 - 1) the building/land owner,
 - 2) the co-user of the site, and
 - 3) the user(s) of site(s) nearby.

4.3 Project proposal

Before the project proposal is submitted for approval by the relevant authority, the aspects given in 4.3.1 to 4.3.3 should be taken into consideration.

4.3.1 Location of site

The applicant should identify whether the establishment of a radio site at the proposed location could have a significant impact on the environment, as in a case where the location of the radio site is in protected areas (see annex C).

All other aspects as outlined in KS 1590 should be taken in consideration.

4.3.2 List of environmental characteristics

An investigation should be undertaken to determine whether the radio site could have a significant impact on any of the following:

- a) the physical characteristics of the site and its environment;
- b) the current and potential land use and landscape character;
- c) infrastructure services;
- d) risks and hazards; and
- e) the level of RF pollution.

4.3.3 Alternative locations

Possible alternative locations of a radio site should be identified and considered in the planning and assessment of the proposal. Investigations should be undertaken to determine whether

- a) an existing mast can be used, i.e. more than one user sharing a mast, or
- b) an existing site nearby can be used.

If neither of the above is possible, the reasons should be provided.

The environmental impact of the alternative site should be compared with the original proposal.

4.4 Classification

Before an environmental impact investigation is undertaken, the project proposal should be classified in accordance with the procedure outlined in Annex A. This classification is done by the applicant and his consultant, in consultation with the relevant authorities.

4.5 Report

When the investigation is finalized (in consultation with the parties concerned), a report should be compiled.

Particular report requirements may be established by the parties concerned.

The completed report should be reviewed by the authority prior to the licence application.

5 Management of high sites

5.1 Site management committee

A site management committee should be formed to coordinate the engineering and environmental activities of all operators within a radius of 500 m of the site(s). Any new site operator should be represented on the committee at the planning stage of the installation.

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5.2 Environmental aspects

5.2.1 New sites

An environmental impact investigation as described in clause 4 should be carried out by the applicant to try to minimize the site's adverse impact on the existing environment.

5.2.2 Existing sites

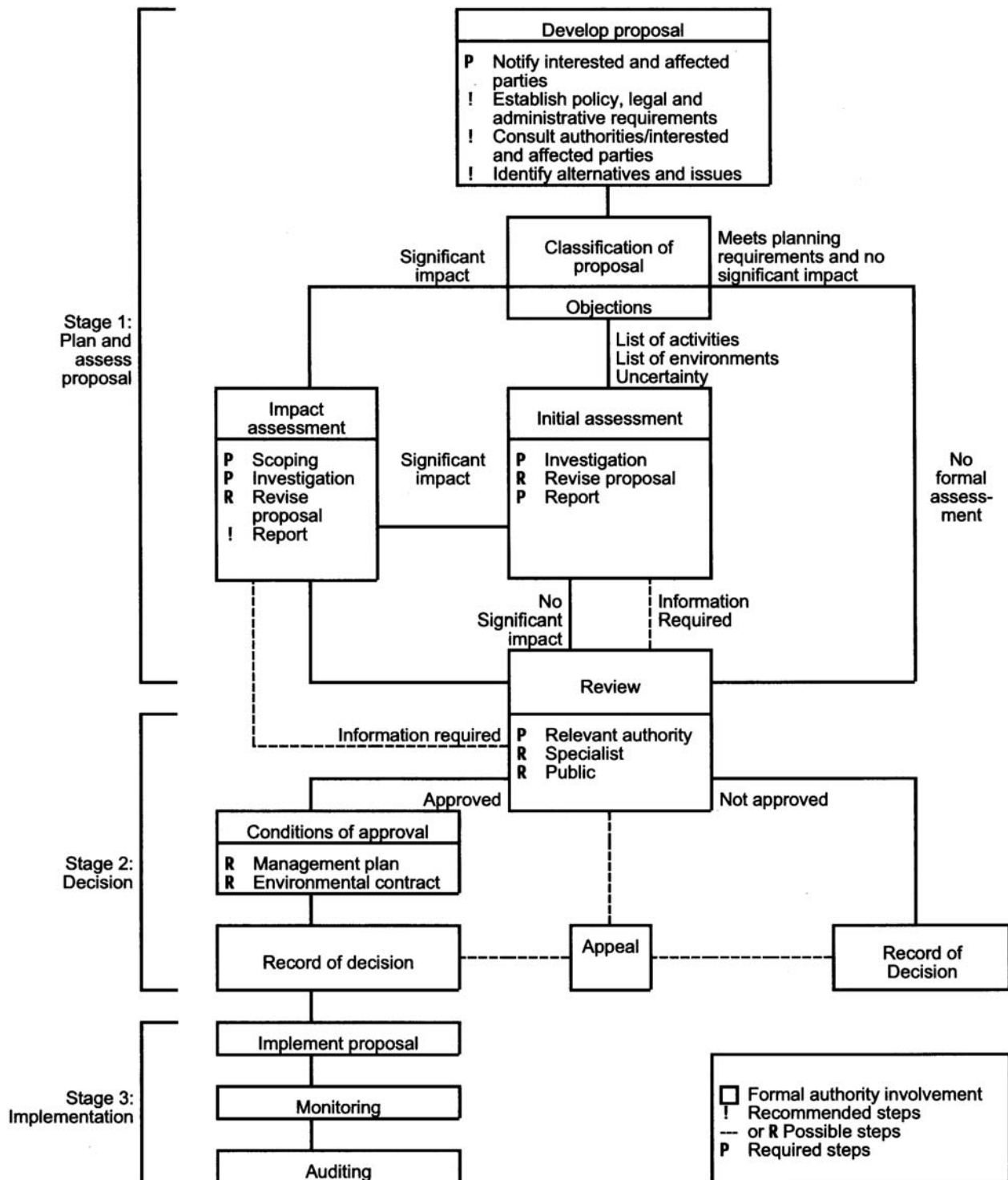
In the case of an existing site, the investigation as described in clause 4 should be carried out by the site management committee, to determine whether the existing site has had any adverse impact on the environment and to determine how such an impact can be reduced.

5.3 Technical aspects

A full investigation of the technical aspects of the site should be carried out with special attention being given to the following:

- a) the possibility of electromagnetic interference
 - 1) with existing services,
 - 2) from existing services, and
 - 3) between co-users of the site;
- b) the possible future of the site in terms of
 - 1) the number of users,
 - 2) future developments planned for the site, and
 - 3) future services that could impact on the operation of the site;
- c) the long-term management of the site;
- d) maintenance of the site, which should include consideration of relevant electrical, interference, civil engineering and environmental standards;
- e) the approval mechanism to be employed by any new user of the site; and
- f) interaction with the local authorities.

Annex A (normative) Environmental impact investigation flow chart



Annex B (informative) Radio site planning

The purpose of this annex is to introduce prospective applicants and site management committees to the basic procedure and to the necessary information that needs to be gathered in the process of site development.

This list is not necessarily complete and is given as an introductory guideline only.

B.1 Service area

The service area should be determined in respect of

- a) present planned service area, and
- b) forecast coverage area.

B.2 Selection of a new radio site location

B.2.1 Environmental impact analysis

The analysis should consider the environmental and technical aspects of the proposed radio site, and alternative locations, including the sharing of sites.

B.2.2 Availability for site development

The developer should ensure that

- a) the owner is willing to allow development,
- b) co-users are willing to share the mast, and
- c) the area is neither protected nor restricted.

B.2.3 Availability of services

The availability of the following services should be ensured:

- a) mains power;
- b) access road(s);
- c) existing infrastructure; and
- d) potential for future infrastructure.

B.2.4 Limitations

Consideration should be given to

- a) limitations on structures,
- b) effects of or on structures nearby,
- c) aviation routes, and
- d) urban planning.

B.3 Improvement or rehabilitation of existing sites

When existing sites are being considered,

- a) the existing site should be investigated with respect to environmental and technical aspects,

- b) the existing site should be upgraded to comply with current radio site engineering requirements, and
- c) any alternative locations that would decrease the environmental impact should be considered.

B.4 Frequency assignment plan

The relevant assigning authority has to consider

- a) limits on interference in the area (e.g. emergency services, airports, etc.),
- b) other services to be accommodated,
- c) frequency bands to be used,
- d) intermodulation products analysis,
- e) electromagnetic compatibility with existing installation, and
- f) plans for the future.

B.5 Administrative considerations

B.5.1 Site management

The site management committee should

- a) appoint a site manager, and
- b) formally define and document the responsibilities of the site manager.

B.5.2 Procurement of the site

One or more of the following steps could be involved:

- a) buying the location;
- b) leasing the location;
- c) agreeing the rental period; and
- d) considering escalation costs.

B.5.3 Legal considerations

The following conditions should be fulfilled:

- a) approval by the relevant authority; and
- b) right of access.

B.5.4 Servitude

Servitude for other users should be granted.

B.6 Future potential of site

Possible future development of the site should be investigated in the case of an existing site and planned for in the case of a new site.

B.7 Site design

Consideration should be given to the following:

- a) climate; and
- b) fencing requirements.

B.8 Site licensing information

Approval for the erection of a site has to be obtained from the relevant licensing authority under whose jurisdiction the site falls. To obtain such approval, the applicant for the site will have to provide a report that provides at least the information below:

- a) the name of the site;
- b) the map co-ordinates;
- c) topographic information (site co-ordinates) and also information on how to access the site;
- d) the site manager;
- e) the site owner;
- f) the name of and the distance to the nearest town;
- g) the planned service area;
- h) the envisaged frequency bands and details of transmissions;
- i) the envisaged services to be accommodated, such as
 - 1) broadcasting,
 - 2) fixed links,
 - 3) land mobile,
 - 4) paging,
 - 5) telemetry,
 - 6) trunking,
 - 7) cellular telephony, and
 - 8) other;
- j) antenna types;
- k) plans of the structure and site, including location of antenna(e);
- l) the site area (showing slope, size of area for erection of mast, building, etc.);
- m) a summary of the environmental impact analysis;
- n) constructional aspects, including precautions to be taken during construction to minimize the impact on the environment;
- o) the height of the site above sea level;
- p) the height of the site above the surrounding terrain;
- q) significant obstructions on or near the site;
- r) details of possible alternative sites;

- s) distance of nearest road, power, etc.; and
- t) existing infrastructure on and near the site.

B.9 Authorities and organizations concerned

The following authorities and organizations should be informed of the proposed development of the site, either during the planning phase or during the approval stage:

- a) the Communications Commission of Kenya (CCK);
- b) the Kenya Civil Aviation Authority;
- c) the relevant local government authority;
- d) the National Environmental Management Authority (NEMA); and
- e) any organization currently operating a radio site at or near the proposed location.
- f) the Ministry of Information and Communication